

MICE Magnet Milestone



The Muon Ionization Cooling Experiment (MICE) seeks to demonstrate a novel technique for cooling a beam of muons (an unstable “cousin” of the electron) to make it easier to accelerate them in future particle accelerators. MICE is being carried out by an international collaboration, including scientists and engineers from Bulgaria, China, Japan, Italy, Switzerland, the UK, and the US, with funding (in the US) from the Department of Energy and the National Science Foundation. The experiment is being assembled at Rutherford Appleton Laboratory (RAL) located near Oxford, England.

The full MICE cooling channel requires five large and complex superconducting magnets. Two additional superconducting magnets called the Spectrometer Solenoids are

located at either end of the cooling channel and are used in the measurement of the emittance of the incoming and outgoing muon beam. The design, fabrication, and testing of the MICE magnets has taken several years, and their progress largely determines the schedule of the project.

The Spectrometer Solenoids were specified by LBNL and designed and built by a private vendor in Livermore, CA (Wang NMR) with design, assembly and testing assistance from various members of the MICE Collaboration. The first of two of the 3-meter-long, 5-coil, 4-Tesla magnets was delivered from California to England late last summer. The second magnet completed its training and acceptance testing on February 21, 2014 and (as had been done for the first unit) is now undergoing precision 3D magnetic field mapping prior to shipping later this spring.

The effort on the Spectrometer Solenoid magnets was led by a team from LBNL with participation from Fermilab, RAL, CERN, and the Illinois Institute of Technology along with other labs and universities. At LBNL, the lead engineer on the project is Steve Virostek, with Heng Pan providing cryogenic engineering and testing support and Kyle McCombs and Adrian Williams performing much of the assembly work. Others at LBNL playing a role in the success of the project include Mike Zisman, Steve Gourlay, Derun Li, Mike Green, Soren Prestemon, John Joseph, Tianhuan Luo, Dennis Calais, Bob Connors, Allan DeMello, Andrew Lambert, and Nanyang Li.

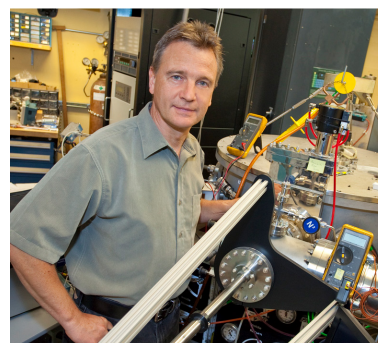
Based on the completion of these magnets and progress on the others, MICE is on track for first data-taking early in 2015. More than one hundred scientists and engineers collaborating on MICE have been working hard toward accomplishing the project goals.

Andre Anders wins Dyke Award

Andre Anders, who leads the plasma applications group for the Accelerator and Fusion Research Division, has won the 2014 Dyke Award from the International Symposia on Discharge and Electrical Insulation in Vacuum (ISDEIV), the highest honor that organization bestows.

Andre has been working at the Lab for over 20 years. He conducts research in plasma physics and material science, including coatings and thin film synthesis, high power impulse magnetron sputtering, cathodic vacuum arc plasma and ion sources, gas plasma sources, ion implantation, and plasma immersion ion implantation, transparent conducting oxides, and electrochromic materials. He is the author or editor of three books on plasma physics, and co-recipient of two R&D100 Awards for work on thin films.

He will receive the award at the next ISDEIV, which will be held this fall in Mumbai, India.



Get to Know Your Colleague: Arun Persaud

What's your name? How do you pronounce it (unless it's obvious)? Do you usually go by a nickname or an anglicized version of your name?

Arun Persaud. My first name is pronounced the German way: "A" as in "far", "run" as in "rune". My last name is pronounced as in French, where the "d" is silent.

What is your current position and what are you working on right now?

I'm a research scientist in the Ion Beam Technology group. At the moment I'm working on the Neutralized Drift Compression Experiment (NDCX-II). We are investigating defect dynamics induced by a short, high current Li ion pulse interacting with a solid target, currently silicon.

Have you done other things at the Lab prior to your current activities?

I joined NDCX-II last October. Before that I worked on a field-emitter based neutron generator and a compact tandem accelerator for gamma production. I also did my PhD work here at the lab working on a quantum computer project where I focused on building a single ion implanter by incorporating an atomic force microscope into a beamline for highly charged ions.

What is your professional background? Where did you work before coming to the Lab?

I received my PhD in physics from the University of Frankfurt, Germany, but did the research for my thesis here in AFRD. Next I worked at the University of Kassel, Germany, and then returned to LBNL for a postdoc and then my current position.

Where are you from originally? Where did you go to college or university?

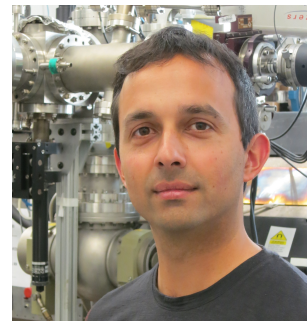
I grew up in a village just north of Frankfurt, Germany. I majored in theoretical physics at the Technical University of Darmstadt, Germany. During my time in Darmstadt I also had a student job in the Linac group at GSI, which was my first contact with the world of accelerators.

What's on your MP3 player? What did you last listen to?

My MP3 player is mostly full of podcasts that I listen to when I take BART to work. The podcasts are a mix of English and German ones, many science related.

Is there something interesting about you that most people at the Lab don't know that you would like to share with the Division?

One of my main hobbies since arriving in the US is juggling. I'm part of the Berkeley Juggling Club, which meets weekly. We mostly do club passing, i.e., patterns that involve several people and more objects than hands. Otherwise, I like a good game of inline hockey, chess, or go, and am also involved with several open-source projects. I also enjoy traveling and exploring the outdoors of the West Coast.



Calendar

April 7th	1:30am-1:30pm	7-211	BLAZES Volunteer Training (registration required)
April 24th	all day	various locations	Daughters and Sons to Work Day (children need to be registered in advance; Lab volunteers needed)

Link of the Month: We've Discovered Inflation!

In the last couple of days, astrophysicists and cosmologists got really excited. BICEP2 (Background Imaging of Cosmic Extragalactic Polarization) announced that they have direct evidence for cosmic inflation.

If you heard about it on the news but want to dig a little bit deeper, Universe Today has two articles giving some background information for non-cosmologists: <http://www.universetoday.com/110360/landmark-discovery-new-results-provide-direct-evidence-for-cosmic-inflation/> explains in general what was actually discovered and how it was discovered. <http://www.universetoday.com/110411/weve-discovered-inflation-now-what/> puts the discovery in context.

Thanks to Arun Persaud for "Get to Know Your Colleague", and to Steve Virostek for the news item on MICE. Thanks to Joe Chew and Sam Vanecek for editing/proofreading.

Please send suggestions for news items, links or "get to know your colleague" to Ina Reichel (IReichel@lbl.gov).